AMENDMENTS TO THE CLAIMS:

The listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF THE CLAIMS

1. (Currently Amended) A battery ~~(1, 138, 158, 180, 200)~~ comprising:

an anode ~~(10, 140, 160, 182, 202),~~;

a cathode ~~(12, 146, 168, 184, 208),~~; and

an electrolyte ~~(20, 148)~~ therebetween, ~~the battery characterized by:~~ at least one of the anode ~~(10, 140, 160, 182, 202)~~ and cathode ~~(12, 184, 208)~~ comprising an electrically conductive sponge material ~~(16, 114, 164, 204)~~ , the electrically conductive sponge material defining dendrites having a width of less than 1 micrometer.

2. (Currently Amended) The battery of claim 1, ~~further characterized by:~~ wherein the at least one of the anode and cathode ~~comprising~~ comprises an electrically conductive substrate ~~(14, 82, 102, 120, 142, 162, 186, 188, 206)~~ which is in electrical contact with the electrically conductive sponge material.

3. (Currently Amended) The battery of claim 2, ~~further characterized by~~ wherein the substrate ~~being~~ is in the form of a foil ~~(14)~~, wire, ribbon ~~(98, 102, 120)~~, cast structure, or sheet ~~(14, 82)~~.

4. (Currently Amended) The battery of claim 2, ~~further characterized by~~ wherein the substrate and the electrically conductive sponge ~~being~~ are formed from the same material.

5. (Currently Amended) The battery of claim 2, ~~further characterized by~~ wherein the substrate ~~including~~ includes a metal selected from the group consisting of silver, copper, and aluminum.

6. (Currently Amended) ~~The~~ A battery ~~of claim 2, further characterized by~~ comprising:

an anode;

a cathode; and

an electrolyte therebetween, at least one of the anode and cathode comprising a substrate and an electrically conductive sponge material, the sponge material being in the form of particles of sponge attached to the substrate.

7. (Currently Amended) ~~The~~ A battery ~~of claim 2, further characterized by~~ comprising:

an anode

a cathode; and

an electrolyte therebetween, at least one of the anode and cathode comprising a substrate and an electrically conductive sponge material, the sponge material being in the form of a layer of sponge grown on the substrate.

8. (Currently Amended) The battery of claim 1, ~~further characterized by~~ wherein the at least one of the anode and cathode ~~comprising~~ comprises a plurality of thin layers of the electrically conductive sponge material.

9. (Currently Amended) The battery of claim 1, ~~further characterized by~~ wherein the electrically conductive sponge material ~~including~~ includes an element selected from the group consisting of copper, silver, gold, aluminum, and combinations thereof.

10. (Currently Amended) The battery of claim [[1]] 7, ~~further characterized by~~ wherein the electrically conductive sponge material ~~defining~~ defines dendrites.

11. (Currently Amended) The battery of claim 10, ~~further characterized by~~ wherein the dendrites ~~having~~ have a width of from about 200 nanometers to 30 micrometers.

12. (Currently Amended) The battery of claim 10, ~~further characterized by~~ wherein the at least one of the anode and cathode ~~including~~ includes at least one substrate layer and wherein the dendrites extend from the substrate.

13. (Currently Amended) The battery of claim 12, ~~further characterized by~~ wherein the dendrites ~~(18)~~ ~~extending~~ extend generally perpendicularly from the substrate layer.

14. (Currently Amended) The battery of ~~any one of~~ claim 1, ~~further characterized by~~ wherein the sponge material ~~being~~ is coated with an electrically conductive material.

15. (Withdrawn) A method of ~~conducting a reaction on a surface~~ forming the battery of **claim 7**, the method comprising:

~~forming the surface (36),;~~

~~contacting the surface with a reactant[[,]]; and~~

~~allowing the reaction to take place, the method characterized by: the step of forming the surface including:~~

growing a sponge material ~~(16, 114, 164, 204)~~ having a plurality of open pores ~~(37, 130)~~ which are accessible to the ~~reactant~~ electrolyte; and

forming the at least one of the anode and the cathode from the grown sponge.

16. (Withdrawn) The method of claim 15, ~~further characterized by~~ wherein the sponge material ~~including~~ includes one of the group consisting of Li, Be, Mg, Al, Si, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ge, Sr, Y, Zr, Nb, Mo, Rh, Pd, Ag, Cd, In, Sn, Sb, Te, Ba, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Hf, Ta, W, Rh, Os, Ir, Pt, Au, Tl, Pb, Bi, Po, and combinations thereof.

17. (Withdrawn) The method of claim 15, ~~further characterized by~~ wherein the step of growing the sponge ~~including~~ includes:

reducing a compound to its elemental form, the elemental form occupying a smaller volume than the compound such that an open porous structure is formed.

18. (Withdrawn) The method of claim 17, ~~further characterized by~~ wherein the step of growing the sponge ~~including~~ includes:

heating a substrate ~~(14)~~ to a deposition temperature;

contacting the substrate with a vapor which includes a halide of the sponge material in the presence of an alkali or earth alkali metal vapor, the sponge halide vapor

reacting with the alkali or earth alkali metal vapor to form the sponge material and an alkali or earth alkali metal halide, the sponge material being deposited on the substrate in the form of dendrites ~~(18)~~.

19. (Withdrawn) The method of claim 18, further ~~characterized by~~ comprising:

removing the alkali or earth alkali metal halide from the sponge material by vacuum distillation.

20. (Withdrawn) The method of claim 15, ~~further characterized by~~ wherein the step of growing the sponge ~~including~~ includes:

heating the sponge material **(86, 114)** with an insoluble material **(88, 116)** to a temperature at which the sponge material and the insoluble material are both liquids, the sponge material and the insoluble material being mutually insoluble at a temperature at which the sponge material freezes;

mixing the two liquids;

cooling the sponge material and the insoluble material to form the sponge; and

removing the insoluble material from the sponge.

21. (Withdrawn) The method of claim 20, ~~further characterized by~~ wherein the step of cooling ~~including~~ includes:

cooling the sponge material ~~(86)~~ and the insoluble material ~~(88)~~ adjacent a substrate ~~(82)~~ to form a directionally grown sponge of the sponge material on the substrate.

22. (Withdrawn) The method of claim 20, ~~further characterized by~~ wherein the sponge material ~~comprising~~ comprises an element selected from the group consisting of Mg, Al, Si, Zn, Ga, Ge, As, Se, Cd, In, Sn, Sb, Cv, Ni, Ag, Ti, Te, Tl, Pb, Bi, and alloys thereof.

[[22]] 23. (Withdrawn) The method of claim 21, ~~further characterized by~~ wherein the insoluble substance ~~being~~ is selected from the group consisting of Na, K, Rb, Cs, Ca, Sr, Ba, and salts thereof.

[[23]] 24. (Withdrawn) The method of claim 17 ~~further characterized by~~ wherein the step of growing the sponge material ~~including~~ includes:

forming an oxide scale ~~(122)~~ on a substrate ~~(120)~~, the substrate including a metal which is oxidizable to an oxide having a lower density than the substrate, by oxidizing at least an outer portion ~~(124)~~ of the substrate to form the oxide scale; and

reducing the oxide scale to the metal, the metal having an open porous structure.

[[24]] 25. (Withdrawn) The method of claim [[23]] 24, ~~further characterized by~~ wherein the step of reducing ~~including~~ includes:

reducing the oxide with a reducing agent ~~(128)~~; and

the method further including after the step of reducing:

removing an oxide of the reducing agent from the porous metal.

[[25]] 26. (Withdrawn) The method of claim [[24]] 25, wherein the oxide of the reducing agent is a fluid.

[[26]] 27. (Withdrawn) A battery comprising:

an anode;

a cathode;

an electrolyte therebetween, at least one of the anode and cathode comprising an electrically conductive metal sponge, the metal sponge having ~~with~~ high specific surface area that is accessible to reactants with reaction paths that are no larger than two times the sponge thickness.

[[27]] 28. (Withdrawn) A metal sponge with a geometry of open porosity between dendrites that enables through-flow of gas or liquid with an electrical resistance that is at least two times less than that of an ordinary sintered powder sponge.

29 (New) A battery comprising:

an anode;

a cathode;

an electrolyte therebetween, at least one of the anode and cathode comprising an electrically conductive sponge material the electrically conductive sponge material defining dendrites; and

a layer of a different material on the dendrites which spaces the dendrites from the electrolyte.

30. (New) The battery of claim 29 and wherein the sponge defines pores having a pore width of less than 30 micrometers, the layer of a different material covering the sides of the pores to provide a passage for access of the electrolyte.

31. (New) The battery of claim 29, wherein the dendrites have a width of less than 30 micrometers in thickness.

32. (New) A battery comprising:

an anode;

a cathode;

an electrolyte therebetween, at least one of the anode and cathode comprising an electrically conductive sponge material the electrically conductive sponge material defining dendrites, the sponge having a specific surface area of at least $40m^2/cm^3$.